Answer 3 (a)

The very first line of the prolog program which is "mysterious([],0)." is a fact. It says that when the list is empty the ouput must be zero.

The next line which is "mysterious([X],X)." is a rule that indicates that when the input list consists of single item then the output will be that single item.

Next lines depict that commencing from the first element of the list keep adding every other item of the list.

Where X is the first element, XS is the last element and Y is element that comes next to X.

Answer 3 (b)

When the query is given as mysterious([2,3,4,5,6,7,8,9,10,11],L) the result will be 30.

Adding first item 2 with every alternate item on the list i.e 4,6,8,10 will produce output 30

Answer 4

reach(a,y)

y = b edge(a,z),reach(z,y)

z=b

reach(b,y)

y = c edge1(b,z1),reach(z1,y)

z1 = c

reach(c,y)

fail edge(c,z2),reach(z2,y)